

# Notice of Allowability

Application No.

09/849,810

Examiner

Duc C. Ho

Applicant(s)

SANTIAGO ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed 4-25-05.
2. ☒ The allowed claim(s) is/are 1-3, 9-10, 13-14, 17-18, 22-27, 4-8, 11-12, 19-21, 28-32, 33-46, 48, 47, and 56-58. Renumbered 1-49, respectively.
3. ☒ The drawings filed on 07 September 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
  1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
  6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
    - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
    - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date \_\_\_\_\_
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 05-16-05.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_.

## DETAILED ACTION

### EXAMINER 'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Brad Pederson on 05-16-05.

The application has been amended as follows:

In the claims:

Cancel claims 49-55, and 59-60.

Claim 17, line 1, "claim 16" has been changed to --- claim 1 ---.

Claim 20, line 4, after "based on", insert --- layer-4 protocol layer information, and based ---.

**Claim 8, replace claim 8 (Currently Amended) with an approved version of currently amended as below:**

8. (Currently Amended) A method for policing communications packets, comprising:

classifying a data stream into at least one traffic flow;

classifying at least one of the traffic flows into a plurality of first level subflows;

classifying at least one of the first level subflows into further levels of subflows to an  $n^{\text{th}}$  level of subflows;

measuring a rate of each of the first level subflows associated with the traffic flow when the traffic flow reaches a predetermined bandwidth threshold;

marking the packets associated with each of the first level subflows with one of a plurality of conformance indicators based on the measured rate of the respective first level subflows;

measuring a rate of each of the  $n^{\text{th}}$  level subflows associated with its parent subflow; and

marking the packets associated with each of the  $n^{\text{th}}$  level subflows with one of a plurality of conformance indicators based on the measured rate of the respective  $n^{\text{th}}$  level subflow.

### ***Reason for Allowance***

2. Regarding claims 1-3, 9-10, 13-14, 17-18, 22-27, 33-46, 48, and 56-58, the prior art fails to teach or suggest a method for policing communications packets, comprising classifying the data stream into at least one traffic flow using information other than a Peak Information Rate (PIR) or a Committed Information Rate (CIR) to distinguish the traffic flows, and marking the packets associated with each of the first level subflows with one of a plurality of conformance indicators based on the measured rate of the respective first level subflows, in combination with other limitations, as specified in the independent claims 1, 33, 56, 57, and 58.

Regarding claim 4, the prior art fails to teach or suggest a method for policing communications packets, comprising classifying at least one of the first level subflows into a plurality of second level subflows, and marking the packets associated with each

of the first level subflows with one of a plurality of conformance indicators based on the measured rate of the respective first level subflows, in combination with other limitations.

Regarding claim 5, the prior art fails to teach or suggest a method for policing communications packets, comprising classifying at least one of the first level subflows into further levels of subflows to an  $n^{\text{th}}$  level of subflows, and marking the packets associated with each of the first level subflows and the  $n^{\text{th}}$  level subflows with one of a plurality of conformance indicators based on the measured rate of the respective first level subflows and the  $n^{\text{th}}$  level subflows, in combination with other limitations.

Regarding claim 6, the prior art fails to teach or suggest a method for policing communications packets, comprising the steps of marking the packets associated with each of the first level subflows and the  $n^{\text{th}}$  level subflows with one of a plurality of conformance indicators based on the measured rate of the respective first level subflows and the  $n^{\text{th}}$  level subflows; assigning a rate limit to each of the  $n^{\text{th}}$  level subflows, and comparing each  $n^{\text{th}}$  level subflow to its corresponding rate limit, in combination with other limitations.

Regarding claim 7, the prior art fails to teach or suggest a method for policing communications packets, comprising the steps of classifying a data stream into at least one traffic flow, and marking the packets associated with each of the first level subflows and the  $n^{\text{th}}$  level subflows with one of a plurality of conformance indicators based on whether the measured rate of the respective first level subflows and the  $n^{\text{th}}$  level subflows exceed their respective rate limit, in combination with other limitations.

Regarding claim 8, the prior art fails to teach or suggest a method for policing communications packets, comprising the steps of measuring a rate of each of the  $n^{\text{th}}$  level subflows associated with its parent subflow, and marking the packets associated with each of the  $n^{\text{th}}$  level subflows with one of a plurality of conformance indicators based on the measured rate of the respective  $n^{\text{th}}$  level subflow, in combination with other limitations.

Regarding claim 11, the prior art fails to teach or suggest a method for policing communications packets, comprising a step of assigning a priority level to each of the first level subflows, wherein at least two of the priority levels are different so that at least one of the first level subflows has priority over another of the first level subflows, in combination with other limitations.

Regarding claim 12, the prior art fails to teach or suggest a method for policing communications packets, comprising a step of assigning a priority level to each of the first level subflows, wherein at least two of the priority levels are different so that at least one of the first level subflows has priority over another of the first level subflows, wherein the priority levels are effected by associating a rate limit with each of the subflows, and wherein marking the packets based on the measured rate comprises marking the packets based on whether the rate limit is exceeded for the corresponding subflow, in combination with other limitations.

Regarding claim 19, the prior art fails to teach or suggest a method for policing communications packets, comprising a step of classifying at least one of the traffic flows

into a plurality of first level subflows based on layer-4 protocol layer information, in combination with other limitations.

Regarding claim 20, the prior art fails to teach or suggest a method for policing communications packets, comprising a step of classifying at least one of the traffic flows into a plurality of first level subflows based on layer-4 protocol layer information and based on at least a port number, in combination with other limitations.

Regarding claim 21, the prior art fails to teach or suggest a method for policing communications packets, comprising a step wherein classifying the data stream and classifying the at least one of the traffic flows into a plurality of first level subflows comprises classifying the data stream and traffic flows based on any predetermined one or more fields in any embedded header of each packet, in combination with other limitations.

Regarding claim 28, the prior art fails to teach or suggest a method for policing communications packets, comprising a step classifying a data stream into at least one traffic flow, and wherein marking the packets comprises marking the packet associated with a subflow as conforming where the rate of the subflow exceeds its respective rate limit but remain within the predetermined bandwidth threshold of the traffic flow, in combination with other limitations.

Regarding claim 29, the prior art fails to teach or suggest a method for policing communications packets, comprising the steps of assigning a rate limit to each of the first level subflows, and marking the packets comprises: marking the packets associated with a subflow as conforming where the rate of the subflow exceeds its respective rate

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limit but remains within the predetermined bandwidth threshold of the traffic flow, and marking the packets associated with the subflow as non-conforming where the rate of the subflow exceeds both its respective rate limit and the predetermined bandwidth threshold of the traffic flow, in combination with other limitations.

Regarding claim 30, the prior art fails to teach or suggest a method for policing communications packets, comprising a step allocating substantially all of the available bandwidth of the traffic flow to one of the subflows where the traffic flow has reached the predetermined bandwidth threshold and the other subflows are not utilizing bandwidth, in combination with other limitations.

Regarding claim 31, the prior art fails to teach or suggest a method for policing communications packets, comprising the steps marking the packets comprises: marking the packets associated with a subflow as conforming where the rate of the subflow exceeds its respective rate limit but remains within the predetermined bandwidth threshold of the traffic flow, and marking the packets associated with the subflow as non-conforming where the rate of the subflow exceeds both its respective rate limit and the predetermined bandwidth threshold of the traffic flow; and allocating substantially all of the available bandwidth of the traffic flow to one of the subflows where the traffic flow has reached the predetermined bandwidth threshold and the other subflows are not utilizing bandwidth, in combination with other limitations.

Regarding claim 32, the prior art fails to teach or suggest a method for policing communications packets, comprising a step assigning a rate limit to each of the first level subflows and allocating the available bandwidth of the traffic flow to a plurality of

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the subflows if the traffic flow has reached the predetermined bandwidth threshold, wherein the available bandwidth of the traffic flow is allocated to the plurality of subflows based on their respective rate limits and demand for bandwidth, in combination with other limitations.

Regarding claim 47, the prior art fails to teach or suggest a method for providing layered policing of packets of a data stream, comprising identifying at least one characteristic common to an  $n^{\text{th}}$  subset of the flow, and associating the second drop probability with each of the packets of the  $n^{\text{th}}$  subset of the flow, in combination with other limitations.

3. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc Ho whose telephone number is (571) 272-3147. The examiner can normally be reached on Monday through Friday from 7:00 am to 3:30 pm.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu, can be reached on (571) 272-3155.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.



The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent Examiner



Duc Ho

05-17-05